

**The Telecommunications Modernization
Project Provided Some Benefits, But
Process Improvements Are Needed
for Future Projects**

August 2001

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August 27, 2001

MEMORANDUM FOR DEPUTY COMMISSIONER FOR MODERNIZATION &
CHIEF INFORMATION OFFICER

Pamela J. Gardiner

FROM: Pamela J. Gardiner
Deputy Inspector General for Audit

SUBJECT: Final Audit Report - The Telecommunications Modernization
Project Provided Some Benefits, But Process Improvements Are
Needed for Future Projects

This report presents the results of our review of the Telecommunications Enterprise Strategic Program (TESP) project. Our objective was to determine whether the TESP project team was effectively developing and implementing the Internal Revenue Service's (IRS) enterprise-wide telecommunications program.

In summary, we found that the TESP project provided some valuable benefits to the IRS' current and future telecommunications program. The project team provided support to other modernization projects and direction to the IRS in upgrading and consolidating its telecommunications environment. However, the timing of the decision to cancel the project and delays in finalizing a task order resulted in increased costs to the IRS. We also found weaknesses in project tracking, inaccuracies in the TESP section of the September 2000 Information Technology Investment Account Expenditure Plan, and inconsistencies in the implementation of critical project management processes. Addressing these conditions should improve the development of ongoing and future modernization projects.

In this report, we discuss several conditions that were identified not only in this review but also in audits of other ongoing modernization projects. Since these conditions were found in several projects, we believe the corrective actions need to be made at the program rather than project level. To make our recommendations more meaningful, we plan to issue a separate audit report later this year that will detail those conditions common to multiple projects and make recommendations for program level corrective

actions. Consequently, while we discuss these conditions in this report as they relate to the TESP project, we did not include recommendations. However, where appropriate, we did include a summary of actions that the Business Systems Modernization Office was planning or had taken during our audit that addressed the conditions identified.

Management's response was due on August 22, 2001. As of August 23, 2001, management had not responded to the draft report.

Copies of this report are also being sent to the IRS managers who are affected by the report recommendations. Please contact me at (202) 622-6510 if you have questions or Scott Wilson, Assistant Inspector General for Audit (Information Systems Programs), at (202) 622-8510.

**The Telecommunications Modernization Project Provided Some Benefits, But
Process Improvements Are Needed for Future Projects**

Table of Contents

Executive Summary.....	Page i
Objective and Scope.....	Page 1
Background	Page 2
Results	Page 3
The Third Expenditure Plan Could Have Provided More Detail About the Project's Funding and Progress.....	Page 4
Delays in Finalizing Contract Negotiations Resulted in Increased Project Costs	Page 6
Increased Focus on the Quality of Deliverables Is Needed	Page 8
Project Tracking Measures Should Be Expanded and Validated to Provide Greater Value to Program Management Personnel.....	Page 11
Configuration Management Processes Were Not Consistently Followed	Page 12
Risk Management Processes Were Not Effectively Followed	Page 15
Project Management Processes Can Be Improved.....	Page 17
Conclusion.....	Page 18
Appendix I – Detailed Objective, Scope, and Methodology	Page 20
Appendix II – Major Contributors to This Report.....	Page 25
Appendix III – Report Distribution List.....	Page 26

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Executive Summary

The Internal Revenue Service (IRS) Restructuring and Reform Act of 1998 (RRA 98)¹ directed the IRS to do a better job in meeting the needs of taxpayers. To accomplish its goals, the IRS must modernize its existing technology base, which was installed in piecemeal fashion over many years. A new infrastructure for voice, video, and data telecommunications must be developed as part of the foundation for the new IRS business environment.

The Telecommunications Enterprise Strategic Program (TESP) project was started in July 1999 to address the fact that the current IRS telecommunications infrastructure would not be able to accommodate the increasing levels of demand placed upon it. The mission of the TESP project team was to develop an all-inclusive telecommunications strategy to provide cost-effective, secure solutions throughout the IRS for the foreseeable future. The project team was also responsible for providing the telecommunications needs for the near-term modernization projects. The IRS worked with a contractor, Computer Sciences Corporation (CSC), to develop the TESP project.

The objective of our audit was to determine whether the TESP project team was effectively developing and implementing the IRS' enterprise-wide telecommunications program. To accomplish this objective, we reviewed the CSC's delivery of goods and services and evaluated the project team's compliance with critical processes established to enable project success.

In January 2001, while our audit was in process, the IRS decided to cancel the TESP project. IRS executives made this decision because funds for modernization projects were limited and the IRS' immediate focus was on those projects with more specific business benefits. The IRS decided to move the support for near-term projects under the control of a different project and rely upon the Department of the Treasury to provide the IRS' strategic telecommunications needs.

Results

The TESP project provided some worthwhile benefits during its 18-month life, but more effective controls would have avoided delays and cost overruns. The TESP project team had developed a preliminary vision for the IRS' future telecommunications program and was working towards adding detail to that vision and supporting other projects when the

¹ Pub. L. No. 105-206, 112 Stat. 685 (codified as amended in scattered sections of 2 U.S.C., 5 U.S.C., 5 app., 16 U.S.C., 19 U.S.C., 22 U.S.C., 23 U.S.C., 26 U.S.C., 31 U.S.C., 38 U.S.C., and 49 U.S.C.).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

project was cancelled. The IRS Business Systems Modernization Office (BSMO) had established some processes to assist this project and others in achieving their goals. For example, the BSMO established a quality review process for each modernization project to evaluate, at the end of each major set of tasks, the products provided by the CSC to determine if they met required standards. The TESP project team provided support to other near-term modernization projects by performing complex analyses of their telecommunications requirements using computer-modeling tools. In addition to supporting near-term projects, the project team provided direction for the IRS in upgrading and consolidating its current telecommunications environment.

However, we identified conditions that resulted in inaccurate funding requests, increased project costs, project delays, and inconsistencies in project quality and management. Although the TESP project is not continuing, we believe the issues identified in our report will be applicable to and should be addressed in other ongoing and future modernization projects.

The Third Expenditure Plan Could Have Provided More Detail About the Project's Funding and Progress

Our review identified two significant facts that were not properly disclosed, we believe unintentionally, in the TESP portion of the September 2000 Information Technology Investment Account Expenditure Plan which was provided to the Congress for funding approval. First, it did not disclose that \$6.8 million of the TESP project funding was used to purchase hardware and software for a separate project. Instead, the funding was reported as TESP project labor costs. Secondly, the Plan indicated that material progress had been made towards the development of the Preliminary Business Case, a key product to be developed as the project team approaches the completion of its second phase. However, work on this product did not begin until January 2001, several months after the Expenditure Plan was prepared. It is important that expenditure plans be as clear and accurate as possible so that the Congress can make informed decisions about funding the various projects.

Delays in Finalizing Contract Negotiations Resulted in Increased Project Costs

A preliminary contract had been signed to allow the CSC to begin work on the system concept phase (also called the Architecture phase) of the project, but neither the requirements nor the full dollar amount to complete the phase had been negotiated. The IRS paid for hours worked by the CSC, rather than a specific amount for each completed product. The payments for the hourly work increased over 5 months to nearly \$3.9 million by the time the project was cancelled.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Because this project was cancelled, the tasks included in the proposal received from the CSC were only partially completed. Approximately \$1.1 million of the \$3.9 million had been spent on these incomplete products at the time the decision was made to cancel the project. In addition, documentation indicates that the IRS paid nearly \$300,000 more to the CSC than would have been expected if the CSC's initial contract proposal had been accepted as submitted.

Increased Focus on the Quality of Deliverables Is Needed

The BSMO has recently begun to focus heavily on ensuring payments to contractors are based on performance. This increased focus should help to ensure payments are associated with the work products that are produced according to IRS quality standards. The BSMO identified quality problems with the products the CSC provided during the business vision phase of the project. For example, the BSMO identified 18 conditions in the business vision documents that the CSC needed to address and requested the CSC to provide more details. This additional work resulted in a 1-month delay in full approval to move on to the next project phase.

Project Tracking Measures Should Be Expanded and Validated to Provide Greater Value to Program Management Personnel

The project team used earned value² measurements to track project progress by individual phase. Although earned value is an appropriate project tracking approach, measures that cover each individual phase are too limited to measure the overall progress of a project that covers five phases. Earned value techniques are designed to measure against a total budgeted amount, not just a current project phase. In addition, no validation of the project measures had been conducted at the time we completed our audit work. The data could be more useful and reliable if changes are made to the manner in which these measures are developed and a validation process is established.

Configuration Management Processes Were Not Consistently Followed

The TESP project team had developed a configuration management plan that addressed the key items required by the Enterprise Life Cycle (ELC).³ The plan outlined proper controls over project documentation and indicated that a project document repository would be established to ensure version control over documentation and system modules.

² Earned value is a management technique which measures actual cost and work accomplished against the budgeted cost and planned work scheduled. Variances between these actual and planned factors are analyzed and provided to management for decision-making.

³ The ELC establishes a set of repeatable processes and a system of reviews, checkpoints, and milestones that reduce the risks of systems development and ensures alignment with the overall business strategy. All IRS and CSC personnel involved in modernization will use the ELC.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

However, the CSC was not following the configuration management plan. The project document repository, where critical project documentation is maintained, was accessible to anyone on any of the project teams. This repository included both baselined⁴ documents and those that were still in process. There was no control over the various versions of key documents that had been accepted and signed by the BSMO, and these accepted documents were not easily identified in this repository. Without this control, it is difficult to determine which documents are final and baselined. This could lead to project team members following the wrong set of requirements or agreements while developing the project. During our audit, the BSMO and the CSC initiated corrective actions regarding configuration management processes.

Risk Management Processes Were Not Effectively Followed

Although the TESP project team was using the correct forms and processes to document risks to the project, we believe it should have reported additional risks that affected completion time periods and costs.

We evaluated the risks that had been identified during the project. Although the project completion dates were delayed for several months, there were no documented risks for the cause of the delays, nor were there any indications of what the project team was doing to reduce the potential impact of the delays.

For example, delays in negotiating the TESP task order with the CSC resulted in additional costs to the IRS and a lack of quality standards associated with the deliverables. This contract delay, along with the additional costs and lack of standards, was not identified as a potential risk or issue to the project. The BSMO and the CSC have begun initiating corrective actions regarding risk management processes.

Project Management Processes Can Be Improved

The TESP Project Manager was using a Work Breakdown Structure (WBS)⁵ to manage the project team's tasks. The WBS listed the tasks that were required to be completed by the project team. Each task was identified with a specific WBS identification number and had an assigned start date, finish date, and estimated duration. However, near-term tasks were not assigned to individual team members, and the WBS did not factor in or allow for reserve or recovery time in the schedules.

⁴ A baseline consists of a specified set of documents, software, and other items defined as final (or point-in-time) products for a project. A baseline establishes a predefined point from which to evaluate project progress.

⁵ A WBS is a project schedule that lists all activities required by the project and includes detailed tasks, task assignments, time periods, and task dependencies.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Summary of Recommendations

This audit was performed in conjunction with several other modernization project audits. The conditions described above were also identified in the other audits. Because these conditions were identified in multiple projects, we believe that corrective actions should be taken by the BSMO at the program level rather than by the individual project teams. Consequently, we are not making any recommendations in this audit report. We plan to issue a separate report later this year with recommendations for corrective actions that the BSMO can take at the program level to address the conditions identified.

Management's Response: Management's response was due on August 22, 2001. As of August 23, 2001, management had not responded to the draft report.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Objective and Scope

The objective of this audit was to determine whether the TESP project team was effectively developing and implementing the IRS' telecommunications program.

The overall objective of our audit was to determine whether the Telecommunications Enterprise Strategic Program (TESP) project team was effectively developing and implementing the Internal Revenue Service's (IRS) enterprise-wide telecommunications program.

To accomplish this objective, we determined whether the modernization contractor hired by the IRS was delivering high-quality requested goods and services in a timely and cost-effective manner. To evaluate contractor timeliness and quality, we focused our review on products associated with the initial approval of the business vision phase because that was the last phase the project team had successfully completed. To evaluate cost, we reviewed all of the task orders that were associated with the project.

We also evaluated whether the project team was following critical processes that had been established to enable its success and whether the team was taking steps necessary to ensure consistency with the evolving enterprise architecture in the IRS' Modernization Blueprint. Our audit focused primarily on processes such as configuration management, risk management, requirements development, and performance tracking.

We conducted this audit from October 2000 through March 2001, in the National Headquarters' Business Systems Modernization Office (BSMO) and at the Computer Sciences Corporation (CSC) office. This audit was performed in accordance with *Government Auditing Standards*.

Details of our objective, scope, and methodology are presented in Appendix I. Major contributors to this report are listed in Appendix II.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Background

The IRS Restructuring and Reform Act of 1998 (RRA 98)¹ directed the IRS to do a better job in meeting the needs of taxpayers. To accomplish its goals, the IRS must modernize its technology base. The problem with the IRS' current information technology is that many of its components were installed in piecemeal fashion over a long period without direction or focus. Therefore, a new infrastructure must be developed as part of the foundation for the new IRS business environment. Voice, video, and data telecommunications are a critical part of this infrastructure. Without effective telecommunications, the ability of the IRS to conduct business in the future will be severely constrained.

The TESP project was started in July 1999 because the IRS' telecommunications infrastructure would not be able to accommodate the increasing levels of demand placed upon it.

The IRS organized the BSMO to oversee the modernization efforts, and contracted with the CSC to help develop and integrate the projects. The TESP project was started in July 1999 to address the fact that the current IRS telecommunications infrastructure would not be able to accommodate the increasing levels of demand placed upon it. The mission of the TESP project team was to develop an all-inclusive telecommunications strategy to provide cost-effective, secure solutions throughout the IRS for the foreseeable future. The project team was also responsible for providing the telecommunications needs for the near-term modernization projects.

The TESP project was cancelled by IRS executives in January 2001.

In January 2001, the IRS decided to cancel the TESP project, move the support for near-term projects under the control of a different project, and rely upon the Department of the Treasury to provide the IRS' long-term or strategic telecommunications needs. IRS executives made this decision because funds for modernization projects were limited and the IRS'

¹ Pub. L. No. 105-206, 112 Stat. 685 (codified as amended in scattered sections of 2 U.S.C., 5 U.S.C., 5 app., 16 U.S.C., 19 U.S.C., 22 U.S.C., 23 U.S.C., 26 U.S.C., 31 U.S.C., 38 U.S.C., and 49 U.S.C.).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

immediate focus was on those projects with more specific business benefits. Although the TESP project is not continuing, we believe the issues identified in our report will be applicable to and should be addressed in other ongoing and future modernization projects.

Results

The TESP project team provided support to other projects and provided direction for consolidating and upgrading the current telecommunications environment.

The TESP project team had developed a preliminary vision for the IRS' future telecommunications program and was working towards adding detail to that vision, while supporting other projects, when it was cancelled in January 2001. The BSMO had established some processes to assist this project and others in achieving their goals. For example, the BSMO established a quality review process to evaluate, at the end of each major set of tasks, the products provided by the CSC to determine if they met required standards.

The TESP project team provided support to other near-term modernization projects by performing complex analyses of their telecommunications requirements using specialized computer models. In addition to supporting near-term projects, the project team provided input and direction for the Modernization Blueprint related to the upgrading and consolidating of the IRS' current telecommunications environment. The project team also developed a preliminary vision and strategy document, which will be provided to the Department of the Treasury for use in developing a modernized telecommunications structure.

Although the project provided some worthwhile benefits during its life, more effective controls would have minimized significant delays and cost increases.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

The Third Expenditure Plan Could Have Provided More Detail About the Project's Funding and Progress

Because the IRS has struggled with modernizing the tax system in the past, the Congress established the Information Technology Investment Account (ITIA) to fund IRS modernization in controlled increments. The IRS is required to submit periodic expenditure plans requesting funding from the ITIA for its modernization projects. The ITIA expenditure plans are reviewed by the General Accounting Office (GAO) and must be approved by the IRS' executive committee, the Office of Management and Budget, and the Department of the Treasury's IRS Management Board.

Our review determined there were two significant facts that were not properly disclosed in the TESP section of the September 2000 ITIA Expenditure Plan.

During the course of our audit we reviewed the TESP section of the September 2000 ITIA Expenditure Plan, which was the most current plan available during the fieldwork phase of our audit. We reviewed this Plan to determine whether the TESP project's costs were within the estimated or budgeted costs that were reported to the Congress for the TESP project. Our review determined there were two significant facts that were not properly disclosed in this Expenditure Plan.

First, the Expenditure Plan did not disclose that \$6.8 million of the \$14.1 million allocated to the TESP project was used to purchase hardware and software to support the rollout of a separate project, the Customer Communications 2001 Release. Instead, the funding was reported as TESP project labor costs. In addition, these funds were not paid to the CSC; they were paid to a separate contractor, TRW Incorporated, as part of the IRS' Treasury Communications Systems (TCS) contract.²

² The IRS purchases its telecommunications hardware and software to upgrade its telecommunications environment through the TCS contract.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

The \$6.8 million for the Customer Communications 2001 Release project was included in the TESP section of the Expenditure Plan because the TESP project managers thought that all telecommunications-related costs associated with various modernization projects were to be allocated out of TESP funds on behalf of the projects. We do not disagree with how the \$6.8 million was spent, and we do not believe there was any intent to mislead the readers of this Expenditure Plan. However, we believe the Expenditure Plan should have fully disclosed how these funds were spent.

Secondly, the Expenditure Plan indicated that material progress had been made towards the development of the TESP project's Preliminary Business Case, a key product to be developed in the project's second phase. Our review of the TESP Project Manager's schedule and interviews with the TESP project team indicate that work on this deliverable did not begin until January 2001, several months after the Expenditure Plan was prepared and submitted to the Congress.

The BSMO reported that material progress had been made on the Preliminary Business Case because a lot of data was collected during the development of the Case for Action document that pertained to the Preliminary Business Case. However, we did not consider this material progress because a draft Preliminary Business Case was not available during our review.

It is critical that expenditure plans be as clear and accurate as possible so that the various oversight groups and the BSMO can make fully informed decisions about providing funding to the various projects that are included in the plans.

Management Actions: Subsequent to the completion of our audit work, the IRS issued its fourth Expenditure Plan, dated March 2001. This Plan showed that \$6.8 million of the funds previously allocated to the TESP project was spent on hardware and software.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Delays in Finalizing Contract Negotiations Resulted in Increased Project Costs

When we began our audit work, the TESP project team had completed its initial business vision phase and had received approval from the Core Business Systems Executive Steering Committee (CBS ESC)³ to move into the system concept phase (also called the Architecture phase). A contract, known as a task order, was signed to allow the CSC to begin work on the project while specific deliverables and costs were negotiated. The task order called for the IRS to pay the CSC for the hours worked until the specifics for the system concept phase were negotiated.

Work under this “level of effort” task order continued for several months, until the project was ultimately cancelled. The IRS and the CSC could never agree to the proposed costs for the products, so all of the payments on the task order were associated with hours the CSC staff worked rather than with specific products. The amount the IRS paid to the CSC on the task order grew over 5 months to nearly \$3.9 million.

A performance-based contract should be used to ensure payments are based on specific deliverables rather than for hours worked.

Prior to project cancellation, the TESP team delivered justifications for three of five planned “quick-hit” projects for use by the IRS’ telecommunications office.

As a part of the TESP project team’s system concept work, the CSC did deliver justifications and plans for three of the proposed five “quick-hit” projects for use by the IRS’ telecommunications office. These documents provided direction to the IRS in upgrading and consolidating some of its current technology, but they did not address modernization of the overall telecommunications environment. In addition, the TESP project team provided support to some of the other near-term modernization projects, and when the project

³ The CBS ESC is a high-level executive committee that includes the IRS Commissioner and high-level contractor officials. It meets at least monthly to review project progress and approve funding requirements.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

The project spent \$1.1 million on products that were never received in final form.

was cancelled, partially completed system concept phase work products were provided to the IRS by the CSC for use as needed by the Department of the Treasury.

By the time the project was cancelled, the IRS had spent approximately \$1.1 million (28 percent of the \$3.9 million total) for the CSC's work on documents for the system concept phase. Examples include a Preliminary Business Case and a Business Area Architecture report. The information in the documents was useful, but none of the documents received were final or official. We also compared the costs for work performed (as gathered from the CSC's initial proposal) with the amount the IRS agreed to pay the CSC when the project was cancelled. We determined that the IRS paid nearly \$300,000 over what would have been the expected cost of this work if the CSC's proposal had been accepted as it was originally submitted.

Delays have occurred since the original planned system concept phase exit date.

Delays in the project also occurred. Project work initially focused on developing a vision and a mission for the IRS' telecommunications. Work continued towards developing the systems concept, and the planned date for completing this phase was September 30, 2000. However, the work on this phase did not begin until after this date and, prior to project cancellation, the completion date had been pushed back to April 15, 2001.

When we discussed these delays with project management, they indicated that when the original estimate for completing the systems concept phase was developed, the negotiations over the contract had not been finalized. Therefore, they did not have a clear idea of the time it would take to complete the necessary tasks and, consequently, their estimate was inaccurate.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Increased Focus on the Quality of Deliverables Is Needed

The BSMO has recently begun to focus on ensuring payments are based on contractor performance.

The BSMO has recently begun to focus heavily on ensuring payments in the task orders are based on contractor performance. This increased focus should help to ensure payments are associated with the work products that are produced according to IRS quality standards. However, based on the results of our review of the quality issues the BSMO identified with the products developed by the CSC to complete the business vision phase, we believe that both organizations should increase their focus on ensuring quality.

Quality of deliverables

We identified several significant conditions that were not addressed when required by CBS ESC approval documents. In addition, the project's progress was delayed for 1 month because the project team had to address inadequacies in these products.

In its review process, the BSMO identified quality issues with the Case For Action (CFA) and the Project Management Plan (PMP). These critical documents were developed during the TESP project's business vision phase by the CSC. The quality issues were reported as conditions, most of which the CBS ESC required to be addressed before the project moved into its next phase.

When the project team made its first presentation to the CBS ESC for approval of completion of the business vision phase in September 2000, the committee agreed to partial and conditional funding approval to proceed to the next phase. The conditional approval required that two issues be addressed. First, the committee required that the contractor address the 18 conditions listed in the committee's approval document. Of the 18 conditions listed, 14 were found in the TESP project's CFA and PMP. Second, the committee requested that additional details be included in the CFA. Until these details were

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

included, funding for the long-term or strategic portion of the project was withheld.⁴

We judgmentally selected six of the more significant conditions to determine whether they had been addressed. We determined that three of the six, those associated with the CFA, were addressed in a timely manner. However, two of the remaining three, those associated with the PMP, were delayed until sometime in the future. These two conditions involved the need for better guidance on risk and issue management and more information on how quality would be assured throughout the project. The BSMO agreed that these items could be delayed, although the CBS ESC included them in the list of changes needed for completion approval for the business vision phase.

Several of the conditions associated with the business vision documents should have been addressed by the CSC prior to submission of the documents for review.

Although the CSC addressed some of the conditions timely and the BSMO withheld funding until some of the other conditions were addressed, these issues still resulted in delays in project progress. In addition, based on our review of Enterprise Life Cycle (ELC)⁵ requirements, we believe that several of these conditions should have been addressed before the documents were provided to the IRS for review. For example, we believe that the project team should have followed prescribed ELC document formats and addressed risks, potential dependencies, and quality management in key documents prior to their submission for review.

Management Actions: The BSMO is currently developing procedures to require defined task orders prior to allowing project teams to progress into the next phase. The procedures documenting this new effort

⁴ Approval to proceed to the system concept phase for the long-term or strategic portion of TESP was given the following month.

⁵ The ELC establishes a set of repeatable processes and a system of reviews, checkpoints, and milestones that reduce the risks of systems development and ensures alignment with the overall business strategy. All IRS and CSC personnel involved in modernization will use the ELC.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

were not available for our review prior to the completion of our audit work.

In addition, the IRS quality review process is currently undergoing changes. We received a draft version of the new procedures during our review. This version indicated that each condition should contain a brief description; detail the impact, if any, on the project's cost, schedule, and/or benefits; and show an expected completion date. At the time of the TESP project's completion of the business vision phase, this new procedure had not been adopted, and the TESP project conditions did not contain expected completion dates or descriptions of the impact of the conditions.

Development of task orders

The TESP task orders did not contain positive or negative incentives for quality or timeliness.

We reviewed the TESP project task orders to determine whether they included any positive or negative incentives for quality or timeliness. None of the task orders we reviewed contained any clauses that could have been exercised had the contractor not addressed the quality conditions timely.

Government policy⁶ states that contracts should include incentive provisions to ensure contractors are rewarded for good performance and quality assurance deductions to discourage unsatisfactory performance. In February 2001, we reported that the BSMO should strengthen the use of performance-based contractor incentives.⁷ The BSMO responded that it would work with another contractor to identify recommendations to improve the use of incentives.

⁶ Federal Acquisition Reg. (FAR), 37 C.F.R. § 601 (1999).

⁷ *The Business Systems Modernization Office Has Made Solid Progress and Can Take Additional Actions to Enhance the Chances of Long-Term Success* (Reference Number 2001-20-039, dated February 2001).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

Stronger incentives in task orders and requiring products to be completed before moving to the next development phase should improve timeliness and quality.

Stronger incentives in the task orders should help improve the timeliness and quality of products. Requiring the project teams to complete the most significant conditions associated with documentation or products prior to being funded for the next phase should also lead to improved timeliness and quality.

Project Tracking Measures Should Be Expanded and Validated to Provide Greater Value to Program Management Personnel

The TESP project team, along with the other modernization project teams, was using earned value⁸ techniques to measure the status of the project. These techniques include measurements of schedule, cost, and value. The project team is currently preparing these measures by phase or task order.

The Clinger-Cohen Act of 1996⁹ requires the agency Chief Information Officer to monitor the performance of information technology programs of the agency. This includes evaluating the performance of those programs on the basis of applicable performance measures and advising the agency head regarding whether to continue, modify, or terminate the programs or projects.

The ELC indicates that budget and cost measures should include all task orders related to a project across all phases, not just those related to the current phase.

The ELC indicates that budget and cost measures should include all task orders related to a project across all phases, not just those costs related to the current phase. Measures should be made using total costs to date and estimated future costs rather than focusing on just those costs related to a single phase, as they are currently being measured. Lengthening the period of time over which project value is measured would enable program

⁸ Earned value is a management technique that measures actual cost and work accomplished against the budgeted cost and planned work scheduled. Variances between these actual and planned factors are analyzed and provided to management for decision-making.

⁹ Pub. L. No. 104-106 §§ 5125(c)(2); formerly known as The Information Technology Management Reform Act of 1996. B.6.11 & B.6.12, Section 5125(c)(2).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

management to determine whether the project team is on track to meet original requirements, time periods, and costs and whether investment in the project should be continued.

However, because the incremental funding process makes this process more difficult, the CSC has not taken the necessary actions to correct the measures and incorporate this change. The data could be more useful and reliable if changes are made to the manner in which these measures are developed.

In addition, validation of these measures should be conducted to ensure they are accurate before reliance is placed on them for project monitoring. In a recent audit report,¹⁰ we recommended that the BSMO assess the CSC's processes to ensure that performance monitoring data are complete and accurate. The BSMO agreed to develop a "surveillance plan" of these processes in December 2000 and to begin this "surveillance" in March 2001. However, we did not find indications that these activities took place.

Management Actions: The BSMO has recognized that, to be of the greatest value, the baseline period of time or cost that earned value data are compared against should include the entire project life cycle or as much of that as possible. As a result, the BSMO has tasked the CSC to change the way it captures project measures.

Configuration Management Processes Were Not Consistently Followed

We reviewed several critical processes that were established by the ELC or by industry best practices to determine whether these processes were being followed by the TESP project. Configuration management is the

¹⁰ *Significant Risks Need to Be Addressed to Ensure Adequate Oversight of the Systems Modernization Effort* (Reference Number 2000-20-099, dated June 2000).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

process of identifying the characteristics of an item (documents, plans, software, etc.) during its life cycle, controlling changes to those characteristics, and recording and reporting changes to the item. The ELC requires that configuration management procedures be implemented throughout the life of the project.

On modernization projects, one of the more important purposes of configuration management is to assist project management in controlling the content of the developing system. Key activities necessary for proper control include establishing baselines¹¹ for approved items and assuring that changes to baselined items are authorized, controlled, and tracked. As a result, an effective configuration management process assists project management in developing systems that meet the intended IRS business needs.

The TESP project team had developed a configuration management plan that addressed the key items required by the ELC. The configuration management plan outlined proper controls over project documentation and indicated that a project document repository would be established to ensure version control over documents and system modules. However, the CSC was not following the configuration management plan.

For example, the project document repository, where critical project documentation is maintained, was more like a “shared electronic project drawer” and was accessible to anyone on any of the project teams. This repository included both baselined documents and those that were still in process.

¹¹ A baseline consists of a specified set of documents, software, and other items defined as final (or point-in-time) products for a project. A baseline establishes a predefined point from which to evaluate project progress.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

We identified weaknesses in version control and inadequate control of baselined documents in the project repository.

There was no control over the various versions of key documents that had been accepted and signed by the BSMO, and these accepted documents were not easily identified in the repository. Without this control, it is difficult to determine which document or configuration item is the official baselined document.

For example, the repository showed six different PMPs. One PMP, dated June 22, 2000, had a version control number of 1.0. A second PMP, dated June 23, 2000, had a version control number of 1.1. A third PMP, dated August 25, 2000, again showed a version control number of 1.0. We could not determine which PMP was the official baselined document.

We found that the most current CFA document, an important deliverable for the business vision phase, was not controlled in the project's repository. The CFA in the project's repository was dated August 22, 2000, while the CFA on the BSMO web site was dated August 29, 2000, indicating that changes were made after August 22, 2000. Therefore, any project member using the document from the project repository would not have had access to the most recent version.

Without proper configuration management over project documentation, confusion can occur within the project team over which documents are the official versions. This confusion could result in project team members following the wrong set of project requirements in preparing future documentation or in programming the requirements into the final system.

The IRS and the CSC are taking steps to improve configuration management.

Management Actions: Before we completed our audit, the BSMO and the CSC had initiated corrective actions regarding configuration management processes. The BSMO implemented Configuration Management Program Instructions. In addition, the BSMO conducted a review and issued a report in February 2001 on the lack of effective configuration management processes. The report confirmed our observation that project baselines were not established for some modernization projects and configuration management inspections

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

(such as baseline configuration audits) were not performed.

The CSC hired a Director to oversee the Configuration Management Office and developed revised procedures for products to be delivered to the IRS. The revised procedures require that baselines be established using formal change requests after products are approved.

Risk Management Processes Were Not Effectively Followed

Effective risk management processes are critical to enable project success.

Risk management is a critical process in project design and development to ensure a project team stays on track and is proactive in addressing potential problems. Effective risk management processes include documenting the potential risks, identifying the impact of the risks, and monitoring the status of the risks. This documentation serves as the basis for development and implementation of risk reduction strategies. From a project management perspective, risk is a measure of a project team's potential inability to achieve objectives within predefined constraints. Constraints may include cost, schedule, and technical or business performance objectives.

Although the TESP project team was using the correct forms and processes to document risks to the project, we believe it should have reported additional risks that affected its completion time periods and costs.

The project risks did not identify why delays occurred or what was being done to reduce the impact of the delays.

We evaluated the risks that had been identified during and after the business vision phase, on both the long-term and short-term portions of the project. Although the project completion dates were delayed for several months, there were no documented risks that would have explained the cause of the delays, nor were there any indications of what the project team was doing to reduce the potential impact of the delays.

For example, delays in negotiating the TESP project task order with the CSC resulted in additional costs to

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

the IRS and a lack of quality standards associated with the deliverables. This contract delay, along with the additional costs and lack of standards, was not identified as a potential risk or issue to the project.

In addition, neither the BSMO nor the CSC had a reliable system to track issues¹² identified by the project teams. The CSC is working to finalize a system to perform this task, but it was not in place at the end of our audit period. We reported weaknesses in the development of risk management processes and procedures in a report issued in June 2000,¹³ and problems with tracking and reporting risks in a separate report issued in March 2001.¹⁴

We believe that much of the confusion in this area has resulted from the continuous changes in the risk management process. Clearer guidelines, definitions, and requirements would help the project teams ensure that proper risk management occurs in each project.

The risk management process is currently under revision.

Management Actions: After our audit fieldwork was completed, the IRS and the CSC provided information that they agreed with our concerns and were implementing the following actions:

- The CSC developed a revised set of risk management procedures that were accepted by the IRS on March 28, 2001.
- The IRS accepted an Issues Management and an Action Item Management approach on March 12, 2001.

¹² An issue is a risk that has been realized.

¹³ *Significant Risks Need to Be Addressed to Ensure Adequate Oversight of the Systems Modernization Effort* (Reference Number 2000-20-099, dated June 2000).

¹⁴ *Progress in Developing the Customer Communications Project Has Been Made, But Risks to Timely Deployment in 2001 Still Exist* (Reference Number 2001-20-055, dated March 2001).

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

- A process action team was formed in April 2001 to develop a proposed concept for an executive risk management review board.

Project Management Processes Can Be Improved

The project's WBS does not assign tasks to individual team members, or allow for reserve or recovery time.

The TESP Project Manager was using a Work Breakdown Structure (WBS)¹⁵ to manage the project team's tasks. The WBS listed the tasks that were required to be completed by the project team. Each task was identified with a specific WBS identification number and had an assigned start date, finish date, and estimated duration. However, near-term tasks were not assigned to individual team members, and the WBS did not factor in or allow for reserve or recovery time in the schedules.

For example, the project team broke down the tasks in the WBS to various levels of detail and, at the lowest level, the Project Manager made assignments to groups of team members who would complete the task. However, we were unable to obtain names of the individuals in each of these groups who were assigned responsibility for the completion of near-term tasks that were scheduled to be completed within the next few days or weeks. Accountability for completion of project tasks is critical to ensuring that projects are completed on schedule and in a quality manner. Although the Project Manager is assigned overall accountability for all the tasks, he or she must delegate responsibility and accountability for the numerous tasks to the individual team members.

We discussed this issue with the TESP Project Manager and other CSC officials, and they indicated that it was not their practice to assign tasks down to individual staff

¹⁵ A WBS is a project schedule that lists all activities required by the project and includes detailed tasks, task assignments, time periods, and task dependencies.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

members. They said that they do not find that information useful on the WBS. However, we believe that accountability for tasks due in the very near future should be documented in the WBS or elsewhere by team leaders and Project Managers. Identifying specific team members can become critical if a person has specific skills and is working on more than one project. The Project Manager needs to be sure that this person will be available when needed, and this becomes difficult when team members are not specifically identified on the WBS.

We also reviewed the WBS to determine if there was reserve or recovery time allocated to address unplanned events that could occur. We did not identify any reserve or recovery time, and project management indicated that they do not separately allocate time to recover from unplanned events. Although reserve time is not always required on a project, it may be necessary if the current schedule is very aggressive or if a project team faces schedule risks. This issue becomes even more critical as project teams move towards development and deployment of systems that affect IRS personnel and taxpayers.

Conclusion

The TESP project provided some valuable benefits during its 18-month life, such as developing a preliminary vision for the IRS' future telecommunications environment, supporting other near-term modernization projects, and identifying opportunities to improve the IRS' current telecommunications structure. However, if contract negotiations had been completed in a timely manner, the IRS could have saved nearly \$300,000. Also, the decision to cancel the project resulted in payments of nearly \$1.1 million for incomplete products.

Process improvements can be made to assist current and future modernization projects. We determined that project tracking should be enhanced to provide for

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

improved investment decision-making and that the BSMO should ensure that critical processes established to enable project success are consistently followed.

Detailed Objective, Scope, and Methodology

The overall objective of our audit was to determine whether the Telecommunications Enterprise Strategic Program (TESP) project team was effectively developing and implementing the Internal Revenue Service's (IRS) enterprise-wide telecommunications program.

To accomplish this objective, we conducted the following tests:

- I. Determined whether the contractor was delivering high-quality requested goods and services in a timely, cost-effective manner.
 - A. Reviewed the documentation of the exit from the initial business vision project phase and Core Business Systems Executive Steering Committee meeting minutes to determine whether the project documentation met all of the pre-determined exit criteria.
 - B. Determined whether the exit from the business vision phase was properly approved. Identified the 18 conditions the project team was required to meet and any other conditions imposed by the executive committee and evaluated them for criticality.
 1. Selected a judgmental sample of 6 of the 18 conditions to determine whether the project team met the conditions within the required time periods. We choose a judgment sampling method because the population was too small for mathematical evaluation and we did not intend to project the sample over the population.
 2. Determined whether meeting the conditions caused additional delays in subsequent delivery dates.
 - C. Interviewed IRS project personnel to determine whether the contractor had been meeting deliverable due dates for the system concept phase.
 - D. Reviewed task orders 44 and 52 to determine whether each task order clearly detailed the requirements for the deliverables.
 - E. Interviewed IRS project management to determine whether a validation process had been implemented to review each deliverable prior to payment for the task order.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

- F. For the business vision phase, determined whether a validation was performed for each deliverable by both the contractor's Quality Assurance staff and a qualified designated IRS official prior to payment for the task order.
- G. Interviewed TESP project management, and reviewed the task orders and the Case for Action, to determine whether the IRS was managing the cost of the TESP project.
 - 1. Reviewed the task orders to determine if firm fixed price task orders were written.
 - 2. Interviewed IRS project personnel and reviewed the task orders to determine if the task orders were defined, agreed to, and approved by all appropriate parties prior to the start of work on the task order. If not, determined how much delay occurred between beginning the work and defining and signing the task order.
 - 3. Reviewed the task orders to determine whether they included both positive and negative incentives of significant and similar consequence.
 - 4. Determined whether modifications to task orders had been approved to increase the original agreed upon firm fixed price cost. If so, identified what additional deliverables were requested and whether the additional deliverables justified the increased cost.
 - 5. Compared the deliverables in each task order to determine whether the deliverables are duplicative, i.e., determined if the IRS was paying twice for the same things.
 - 6. Compared the projected costs spent thus far for the system concept phase to what the contractor proposed to complete the phase. Determined whether amounts spent were proportionate to what would have occurred had the proposal been negotiated as presented. In addition, determined amounts spent towards system concept phase deliverables that were never presented to the IRS in final form.
- II. Determined whether the TESP project team was following the critical processes that had been established to enable its success.
 - A. Determined whether the project team was adhering to the Enterprise Life Cycle (ELC) requirements.
 - 1. Configuration Management:

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

- a. Determined whether a configuration management plan had been developed for the project. Reviewed it to determine whether it addressed key items required by the ELC.
 - b. Determined whether a repository for project documentation had been established. Documented the location, how it was maintained, and who was responsible for the maintenance.
 - c. Determined whether the documents list and the configuration items list had been defined and baselined. Reviewed these lists to determine whether they included all items that should be tracked.
 - d. Determined whether a process had been established for change requests to be initiated and approved/disapproved.
 - e. Determined whether changes were being tracked using some formal process.
 - f. Determined whether a repository for system modules had been developed for version control.
 - g. Determine whether all of the approved baseline documents were properly controlled in the TESP project document repository.
 - 1) Determined whether all business vision phase approved documents had been baselined and included in the repository.
 - 2) Determined whether access to baseline documents was properly restricted.
 - a) Obtained and reviewed a print-out of the authorization file for the TESP project repository. Determined who had access to this repository.
 - b) Reviewed the privileges for the individuals in the authorization file. Determined who had write, edit, add, and delete privileges to the baseline documents.
2. Risk Management:
- a. Determined whether the project team used a risk inventory and assessment worksheet to document risks.
 - b. Determined whether the project team was effectively measuring the potential quantitative and qualitative effects of the risk and whether the most critical risks were raised to an appropriate level of IRS management in a timely manner.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

- c. Determined if all critical documented risks were addressed with mitigation plans. Reviewed mitigation plans for all critical risks to determine whether the plans appeared to effectively address the risks and whether the actions contained in the plans were being tracked and were on schedule.
 - d. Determined whether issues that were identified in the sub-Executive Steering Committee meetings (or elsewhere) were effectively documented, assigned, and tracked until completion.
 - e. Obtained and reviewed the Work Breakdown Structure (WBS) to determine if the project team was behind schedule and, if so, how far. Determined whether the schedule delays were identified as risks to the project and accurately reported to the appropriate officials.
3. Requirements Development:
- a. Determined whether a formal process (workshops, etc.) was used to gather system requirements focusing on individuals at both the executive and technical level of the business function. Looked specifically for those requirements as gathered for 2001 and 2002 projects. Determined whether adequate user involvement was obtained from these project teams in obtaining requirements.
 - b. Determined whether requirements were analyzed for consistency, completeness, and feasibility. Reviewed this analysis to determine whether it appeared comprehensive.
 - c. Determined whether the systems requirements were documented and approved by IRS officials in the business units and in the Modernization and Information Technology Services function.
 - d. Determined whether the project team documented the interrelationships between requirements among the various work products.
 - e. Determined whether requirements of the 2001 and 2002 project releases will be or have been met timely and effectively.
4. Project Staffing:
- a. Compared the organization chart for the project team to the planned staffing information in the Project Management Plan. Determined the actual versus planned staffing.
 - b. Determined whether project management had been able to effectively recruit, obtain, and retain sufficient staff to accomplish their tasks. Evaluated whether there had been significant staff turnover.

The Telecommunications Modernization Project Provided Some Benefits, But Process Improvements Are Needed for Future Projects

- c. Determined whether all tasks scheduled to start within 90 days were assigned to a project staff person.
- 5. Performance Tracking:
 - a. Determined if the Performance Measurement Plan adequately documented how project performance was gauged (i.e., did it identify who should do what, what measures were used, how frequently they were being measured, etc.).
 - b. Obtained access to the project weekly/monthly measures and determined if project measures were being tracked as described in the Performance Measurement Plan.
- B. Determined whether the project team was adhering to Modernization Blueprint requirements.
 - 1. Evaluated whether the project documents adequately documented how the project fits into the IRS' architecture of the future.
 - 2. Obtained and reviewed the key Modernization Blueprint deliverables as well as meeting minutes and other key briefings where TESP project and Blueprint information was discussed. Determined whether the information provided was sufficient to enable the project's direction to be consistent with that of the IRS' overall modernization.

**The Telecommunications Modernization Project Provided Some Benefits, But
Process Improvements Are Needed for Future Projects**

Appendix II

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**The Telecommunications Modernization Project Provided Some Benefits, But
Process Improvements Are Needed for Future Projects**

Appendix III

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